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THE WINTER FINISHING OF STEERS IN WESTERN NOVA SCOTIA

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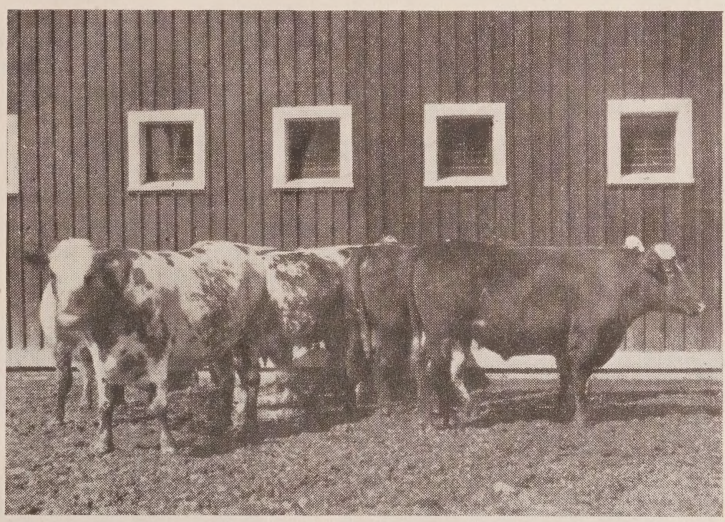


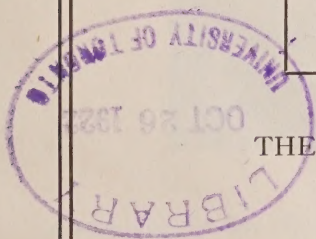
Photo taken by W. W. Baird.
A bunch of good doers fed during the winter of 1915-16.


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THE WINTER FINISHING OF STEERS

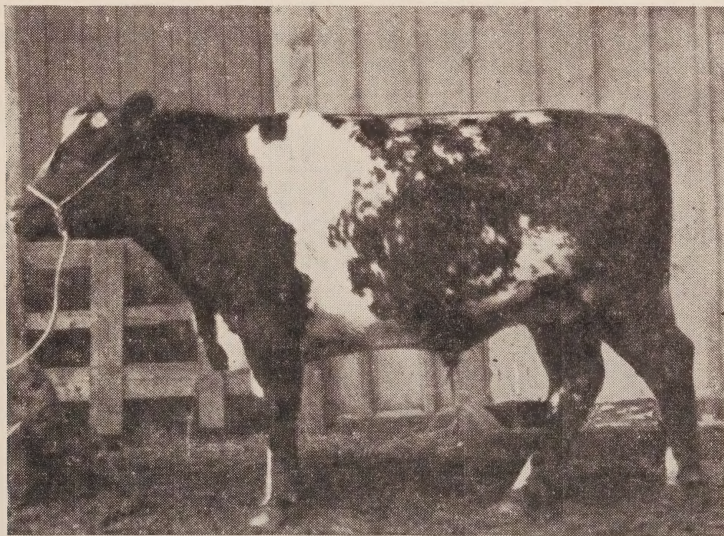
From a careful study of the beef industry in Canada, and particularly in Eastern Canada, the following conclusions have been reached:—(1) That a relatively small percentage of animals sold are properly finished for the block. (2) That only a small number of animals are finished during the months of November, December, January and February. (3) That it is during these months that beef usually brings the best prices. (4) That the consumer is demanding more and more a well-finished product and that preference is shown for fresh-killed over cold storage meat. (5) That the opinion of many of our best stockmen is, that the choice-finished steer will in the very near future be much more in demand.

Naturally, it is the desire of every feeder to realize the best possible profit from his steers. The surest way to do this is to put a well-finished animal on the market; the demand for such, both in the home market and for export trade, is established. It remains for the feeder in the Eastern Provinces to help supply this demand and to establish a name for himself, as a source from which first-class material can be secured.

The material in this pamphlet is compiled from feeding work carried on at the Experimental Farm, Nappan, N.S., during the past eight years and is submitted to the feeder with the hope that it may be of help to him in his work.

SELECTION OF STEERS

Our greatest difficulty has been to secure the right kind of steers for feeding work. There has been a marked decrease in the number of well-bred, beef-type steers raised in Eastern Canada, which means that greater attention must be given to the type of sires used. Our results have proved that the scrub or dairy-type steer is not



The kind that makes profitable gains.

a profitable feeder. Generally speaking, he makes poorer gains, brings a lower price and realizes less profit. In Table I will be noted the marked gains made by the steers fed during the years 1913-14 and 1917-18. Both lots were well-bred Short-horns. They were of uniform size, low-set, comparatively wide, with deep, well-

rounded ribs and quarters carried well down to the hock. The average daily gain made by the 69 good beef-type steers was 2.31 pounds at an average cost per pound of 10.98 cents, against 1.78 pounds average daily gain at an average cost per pound of 12.98 cents for 58 poor beef-type steers fed in 1916-17 and 1918-19. These steers carried a high percentage of dairy blood. Not only did the good beef type produce their gain at two cents per pound less but made .53 pounds per steer per day more gain than the poor beef type. Although these steers were fed during different years, the feed charges were practically the same. These figures corroborate a test carried on in 1898-99, when a comparative test with Angus, Herefords and Shorthorns versus scrub steers was made. All steers were the same age at the start. The good beef-type averaged 227 pounds per steer more than the scrub steer; Angus made an average daily gain of 2.68 pounds per steer, Hereford 1.92 pounds, Shorthorns 1.81 pounds, against 1.69 pounds for the scrub steers. The good beef-type steer sold at one cent per pound more on the market. The increased value of the original weight plus the extra cent meant a profit of \$5.54 more to the feeder for the good steers than for the scrubs. The obvious conclusion reached is, that the better bred, good beef-type steer is the only profitable one to raise and finish.

The following table gives a summary of the average daily gains, average cost per pound gain, average cost per steer per day and average profits over feed consumed for 216 steers fed during the past eight years.

COSTS AND PROFITS

TABLE I

Year	Number of steers	Value of feeds as charged	Average daily gain	Cost per lb. gain	Cost per steer per day	Profit per steer over feed cost
		per ton	lbs.	cts.	cts.	\$ cts.
1913-14.....	27	Hay.....\$ 8 00 Roots..... 2 00 Meal..... 26 00	2.29	8.25	18.89	28.00
1914-15.....	24	Hay.....\$ 8 00 Roots..... 2 00 Meal..... 30 00	2.00	9.48	18.96	19.00
1915-16.....	16	Hay.....\$ 8 00 Roots..... 2 00 Meal..... 30 00	2.01	11.66	23.44	13.75
1916-17.....	34	Hay.....\$ 8 00 Roots..... 2 00 Meal..... 32 80	1.77	10.51	18.60	36.13
1917-18.....	42	Hay.....\$ 8 00 Roots..... 2 00 Meal..... 54 60	2.33	13.71	31.94	32.50
1918-19.....	24	Hay.....\$ 8 00 Roots..... 2 00 Meal..... 49 20	1.78	15.26	27.16	43.66
1919-20.....	23	Hay.....\$ 8 00 Roots..... 2 00 Meal..... 61 80	2.01	22.46	45.14	16.75
1920-21.....	26	Hay.....\$ 8 00 Roots..... 2 00 Meal..... 63.60	1.98	9.80	19.40	5.50

The spread between the buying or rearing cost and selling prices is not only of interest in studying the results of the above table but is an important phase of the work to keep in mind when buying steers for winter finishing. The table following shows cost price and spread per hundredweight for the past eight years.

SPREAD IN PRICES
TABLE II

Year	Fall cost price	Spring selling price	Spread
	per cwt. \$ cts. 7 23	per cwt. \$ cts. 9 00	per cwt. \$ cts. 1 77
1913-14.....			
1914-15.....	6 25	8 25	2 00
1915-16.....	6 25	8 10	1 85
1916-17.....	6 25	10 00	3 75
1917-18.....	8 00	11 00	3 00
1918-19.....	8 25	13 00	4 75
1919-20.....	9 52	13 00	3 48
1920-21.....	8 25	9 13	0 88

The conclusion reached from these tables is, that a good average herd of steers of beef type can make an average daily gain of 2.02 pounds per steer per day at an average cost of 12.64 cents per pound or at a cost per steer per day of 25.44 cents. The feeder may in finishing steers realize an average profit over cost of feed consumed of \$24.41 per steer, with feed prices ranging around \$8 per ton for hay, \$2 per ton for roots, meal at an average price of \$43.50 per ton and an average spread between buying or rearing cost and selling price of \$2.68 per hundredweight.

EXPENSIVE VERSUS INEXPENSIVE BUILDINGS

Tests were conducted in feeding steers tied in stable, loose in box-stalls in stable and in open shed. Our results, in brief, covering a period of six years, are that 91



Feed in loose stall.—Makes economical gains.

steers, tied in stable, made an average daily gain of 2.025 pounds; covering a period of four years 73 steers running loose in box-stalls in stable made an average daily gain of 2.015 pounds; covering a period of two years 52 steers fed in an open shed

made an average daily gain per steer of 1.88 pound. This shows a gain in favour of the tied steers of .145 pound and for those loose in box-stalls in stable .135 pound over lots fed in open shed. The increase in gain would not begin to pay the interest charges on the extra expense in buildings. The shed used in the above test was single-boarded and battened on north and west sides, and complete with yards, cost approximately \$400. This shed was divided into four pens 20 feet x 20 feet, and accommodated 40 steers. The great advantages of the shed method are:—(1) The overhead expenses are within the reach of any feeder. (2) One man can attend two to three times the number of steers, thus housed, with much less labour. (3) The manure voided by these steers would be worth nearly twice that wheeled outside and left in heaps. For example, Holdefliess found that a quantity of food and litter, which in deep stalls yielded 10 tons manure containing 108 pounds nitrogen, yielded only $7\frac{1}{2}$ tons manure containing 64 pounds nitrogen when wheeled out into a heap. This shows that by putting the manure out daily or weekly there is a loss on every 10 tons of $2\frac{1}{2}$ tons in weight and 44 pounds nitrogen. If 40 steers were fed 130 days in open sheds or large box stalls, where it was not necessary to remove the manure until it was put out on the land, they would produce approximately 100 tons manure. The preceding figures would indicate a saving of approximately 440 pounds nitrogen worth 25 cents per pound (the present-day price of nitrate of soda, 16 per cent, is \$80 per ton) or a cash saving of \$110 or a profit per steer of \$2.75. These results would indicate that, with one-fifth the overhead expenses in buildings and equipment, one can attend three times the number of steers, make equally good gains and obtain nearly one-third more manure.

DEHORNING

Having shown by results that it is more economical to feed steers either in open sheds or loose box stalls, we now come to an important phase of beef-feeding work—that of dehorning. An average of 27 steers have been fed during the past eight years, all of which were dehorned before starting the feeding test. The average weight of the steers before dehorning was 1,077.5 pounds; three weeks later the average weight was 1,037.43 pounds, showing a shrinkage of 39.72 pounds. From our observations in weighing steers brought in from pasture, part of this shrinkage, at least, may be attributed to the change of feed and surroundings. In 1914, 24 steers were purchased and housed for over two weeks previous to dehorning. On November 14, they were weighed and dehorned. Three weeks later, December 5, they were again weighed and showed a gain of 1,000 pounds or an average of 41 pounds per steer. The dehorning tests conducted from 1899 to 1902 showed an average shrinkage or loss of 25 pounds per steer and the average time taken to regain loss was two weeks. In six feeding tests, covering a period of 150 days each, the average daily gain made by dehorned steers was 2.16 pounds against 1.96 pounds for horned steers, a gain of .20 pound per day per steer in favour of dehorning. In 1920, Lot 1, six steers were not dehorned but had tips of horns sawed off. In Lot 2, six steers were dehorned. Both these lots were uniform in size and breeding and ran loose in box stalls. Lot 1 made an average gain in 90 days of 154 pounds; Lot 2 made an average gain in 90 days of 213 pounds per steer, which shows a gain of 59 pounds in 90 days in favour of dehorning.

From these tests, it may be concluded that the loss or shrinkage from dehorning is practically negligible. The fact that steers are housed more economically, are more easily handled, shrink less in transit, and reach the market in a condition that will command one to two cents more per pound, combined with the increase in gain, demonstrates the value of dehorning all steers for feeding purposes.

TIME TO DEHORN

It is best to dehorn during cool weather and to perform the operation in the morning as the major part of the bleeding will then be over before night. Select a bright, cool day and allow the steers to remain out all night, feeding them in the lee of the barn. Should the weather be wet, put them in the stable, but leave doors and windows open in order properly to ventilate the barn; in fact, for the first three weeks it is best to keep them out in the open as much as possible and have plenty of fresh air in the stable. Should a steer bleed badly, tie a cord tightly around the base of the horn and put flour on the wound. In this way, very little difficulty should be experienced.

FEEDS AND FEEDING

In practically all the feeding tests conducted, the feeds selected have been, in the main, those grown on the farm, such as good clover hay, ensilage, roots and mixed grain, (oats and barley, equal parts by weight). In addition to this, it has been found profitable to purchase concentrates such as oil-cake, cotton-seed and bran. These have not only a high feeding value but also a high fertilizer value, hence the richer manure from their use is an important consideration.

Tables I to XIV give, in a summarized form, the feeding tests carried on at this farm during the past eight to ten years. The following rations were used:—

Ration No. 1.—200 pounds crushed grain (oats and barley equal parts by weight), 200 pounds bran, 100 pounds cotton-seed, 50 pounds oil-cake.

Ration No. 2.—200 pounds cracked corn, 200 pounds bran, 100 pounds cotton-seed, 50 pounds oil-cake.

Ration No. 3.—100 pounds crushed grain (oats and barley equal parts by weight), 200 pounds bran, 100 pounds cotton-seed, 100 pounds oil-cake.

INFLUENCE OF AGE ON THE COST OF BEEF PRODUCTION

Test 1904-05

TABLE III

	Lot 1 3-year old	Lot 2 2-year old	Lot 3 1-year old
	lb.	lb.	lb.
Daily rate of gain per steer.....	1.6375	1.70	1.75
	cts.	cts.	cts.
Cost of feed per day per steer.....	14.36	14.36	12.36
Cost of 1 lb. gain.....	8.76	8.44	7.06

These trials show that the younger steers make better and cheaper gains; therefore, with age, one may expect a decrease in daily gains with a corresponding increase in cost per pound gain.

INFLUENCE OF WEIGHT ON FINISHING STEERS

Test 1901-02

TABLE IV

	Heavy steer	Light steer	Difference in favour of heavy steer
	lb.	lb.	lb.
Original weight at start.....	1,200	1,000	200
Gain per steer per period.....	356.25	343.75	12½
Daily rate of gain per steer.....	2.37	2.29	
	cts.	cts.	
Cost per steer per day.....	17.64	17.64	
Cost per pound gain.....	7.44	7.70	

These trials show an average daily gain per steer of .08 pounds in favour of heavy steers at a cost per pound gain of .26 cents less.

HEAVY-FED v. LIGHT-FED—GOOD BUTCHERS

TABLE V

Three year average	Heavy-fed 50 per cent more roots and meal	Light-fed 50 per cent less roots and meal
Daily rate of gain per steer.....	lb. 2.252	lb. 2.094
Cost per day per steer.....	cts. 23.25	cts. 17.95
Cost per pound gain.....	10.33	8.65
Profit over cost of feed per steer.....	\$18.38	\$22.40

These trials show an average daily gain of .158 pounds per steer in favour of heavy fed and an increase in cost per pound gain of 1.68 cents.

HEAVY-FED v. LIGHT-FED—GOOD STOCKERS

TABLE VI

Three year average	Heavy-fed 50 per cent more roots and meal	Light-fed 50 per cent less roots and meal
Daily rate of gain per steer.....	lb. 2.114	lb. 1.90
Cost per day per steer.....	cts. 23.25	cts. 18.05
Cost per pound gain.....	11.08	9.57
Profit over cost of feed per steer.....	\$16.06	\$17.92

These trials show an average daily gain of .214 pounds per steer in favour of the heavy-fed and an increase per pound gain of 1.51 cents.

INFLUENCE OF MOLASSES ON FINISHING STEERS—HEAVY-FED—GOOD BUTCHERS

TABLE VII

Three year average	Addition of 2 lbs. molasses	No molasses
Daily rate of gain per steer.....	2.33 lb.	2.11 lb.
Cost per day per steer.....	24.43 cts.	21.90 cts.
Cost per pound gain.....	10.35 "	10.58 "
Profit over feed cost per steer.....	\$16.04	\$19.25

These trials show an average daily gain of .22 pounds per steer in favour of molasses and an average increase cost per pound gain of .23 cents where no molasses was fed.

INFLUENCE OF MOLASSES ON FINISHING STEERS—LIGHT-FED—GOOD BUTCHERS

TABLE VIII

Three year average	Addition of 2 lbs. molasses	No molasses
Daily rate of gain per steer.....	1.81 lb.	1.88 lb.
Cost per day per steer.....	20.77 cts.	16.59 cts.
Cost per pound gain.....	11.47 cts.	8.91 cts.
Profit over feed cost per steer.....	\$20.81	\$22.54

These trials show an average daily gain per steer of .07 pounds in favour of no molasses and an increase in cost per pound gain of 2.56 cents when molasses was used.

INFLUENCE OF MOLASSES ON FINISHING STEERS—HEAVY-FED—GOOD STOCKERS

TABLE IX

Three year average	Addition of 2 lbs. molasses	No molasses
Daily rate of gain per steer.....	2.15 lb.	2.01 lb.
Cost per day per steer.....	24.46 cts.	21.90 cts.
Cost per pound gain.....	11.57 "	10.90 "
Profit over feed cost per steer.....	\$14.78	\$15.83

These trials show an average daily gain per steer of .14 pounds in favour of molasses and an increase in cost per pound gain of .67 cents.

INFLUENCE OF MOLASSES ON FINISHING STEERS—LIGHT-FED—GOOD STOCKERS

TABLE X

Three year average	Addition of 2 lbs. molasses	No molasses
Daily rate of gain per steer.....	2.27 lb.	1.93 lb.
Cost per day per steer.....	20.77 cts.	16.59 cts.
Cost per pound gain.....	8.46 "	8.92 "
Profit over feed cost per steer.....	\$13.83	\$18.80

These trials show an average daily gain per steer of .34 pounds in favour of molasses and an increase in cost per pound gain of .46 cents where molasses is used.

ENSILAGE AND ROOTS v. ROOTS v. ENSILAGE

TABLE XI

(Loose in box-stalls)

Two year average	Half roots and half ensilage	Roots	Ensilage
Daily rate of gain per steer.....	2.255 lb.	2.13 lb.	2.02 lb.
Cost per day per steer.....	24.25 cts.	24.41 cts.	24.41 cts.
Cost per pound gain.....	10.69 "	11.42 "	11.88 "
Profit over feed cost per steer.....	\$34.20	\$37.02	\$34.32

These trials show an average daily gain per steer of .125 pounds in favour of roots and ensilage (equal parts by weight) over roots, and .235 pounds over ensilage alone, and that the increase cost per pound gain was .46 cents for ensilage over roots and 1.19 cents over roots and ensilage combined.

TIED IN STALLS v. LOOSE BOX-STALLS v. OPEN SHED

TABLE XII

Three year average	Tied in stall 3-year average	Loose box-stall 3-year average	Open shed 2-year average
Daily rate of gain per steer.....	1.97 lb.	1.78 lb.	1.74 lb.
Cost per day per steer.....	31.58 cts.	29.87 cts.	24.26 cts.
Cost per pound gain.....	15.87 "	16.20 "	14.33 "
Profit over feed cost per steer.....	\$35.64	\$31.44	\$26.96

These trials show an average daily gain per steer of .19 pounds for tied over loose box-stall and .23 in open shed. The cheaper gains were made in open shed (this was only a two-year average) and slightly cheaper gains made in tied stalls over loose in box-stalls.

DAIRY TYPE v. BEEF TYPE

TABLE XIII

One year average	Holstein grades	Shorthorn grades
Daily rate of gain per steer.....	1.80 lb.	1.91 lb.
Cost per day per steer.....	29.82 cts.	29.82 cts.
Cost per pound gain.....	16.53 "	15.60 "
Profit over feed cost per steer.....	\$44.24	\$45.78

This trial shows an average daily gain per steer of .11 pounds in favour of grade Shorthorn at an average cost per pound gain of .93 cents less.

ENSILAGE AND MARSH HAY v. CLOVER HAY AND ROOTS

TABLE XIV

Test 1920-21

	Marsh hay and ensilage	Clover hay and roots
Daily rate of gain per steer.....	1.813 lb.	2.145 lb.
Cost per day per steer.....	36.54 cts.	40.610 cts.
Cost per pound gain.....	20.15 "	18.930 "

This trial shows an average daily gain per steer of .332 pounds in favour of good clover, hay and roots at a cost per pound gain of 1.22 cents less.

Data from Feeding Trials

In Table III it will be noted that it pays to finish steers as rapidly as possible after ten to twelve months of age, in order to realize good gains and profitable returns. Many feeders keep their steers too long.

In Table IV the results demonstrate to the feeder who wishes to buy steers for feeding that the heavier steers are the more profitable even though equally as good gains are made from the lighter ones. The extra 200 pounds of original weight of heavy steers plus increase in gain of 12½ pounds over the gains made by light steers would realize for the feeder, when selling at 6½ cents per pound, \$5.01 per steer. Providing gains of each lot had been equal, the balance would still be \$4.25 in favour of the heavier steer.

In Table V the heavy-fed steers were given 50 per cent more roots and meal than the light-fed. The heavy-fed steers made slightly better gains but the extra gain was not sufficient to pay for the extra feed, consequently, the conclusion reached was that there is a limit to the amount of feed that steers would make profitable use of and that feeding up to 40-60 pounds roots or ensilage in combination with an average of 6.5 pounds meal per steer per day was more economical. When steers are brought in to be finished, the meal ration should be fed at about 2.5 pounds per steer per day and gradually increased each week, reaching 10 to 12 pounds per steer per day at the end of the period. Roots may be decreased slightly toward the end of the period, particularly if the steers are to be shipped to a distant market, as they will thus shrink less in transit.

Tables VI, VII, VIII, IX and X show the value of molasses fed with the heavy good clover, hay and roots at a cost per pound gain of 1.22 cents less.

Molasses has a well founded reputation as a stock food. Particularly is it valuable as a substitute for succulents in the ration, as a conditioner and appetizer, and as a

relish to roughages more or less unpalatable. In the experiments quoted, the molasses was too high in price for the most economical gains. The greater profit per steer (over feed cost) of those receiving no molasses was due in part, however, to their greater weight at the commencement of the tests, and to factors other than that of the molasses supplement.

In Table XI the results would indicate that a combination of roots and ensilage would give better results than either roots or ensilage alone. Possibly, one reason the ensilage alone made such a poor showing was because the corn used for silage was immature, there being very few cobs set at the time of cutting. In Table XIV when ensilage was used with poor marsh hay, good average daily gains were made. The corn used that year had reached a stage of maturity well suited for ensilage.

The results in Table XIII only corroborate previous tests made in feeding dairy type versus beef type steers. That the good beef-type is the most profitable is now an established fact. Occasionally there has been a dairy type of steer that has made good gains but when they come to the market, they cannot command the high price of the beef-type. Too much emphasis cannot be placed on the use of the good pure-bred sire of the right type.

The average feed required to produce 100 pounds gain covering a period of eight years was as follows:—751 pounds hay, 358 pounds meal, 1,997 pounds roots at an average cost of 13 cents. This is figuring hay at \$8 per ton, roots at \$2 per ton and the meal ration at \$43.50 per ton.

In summing up the points in this question of finishing beef cattle for market, we would advise the farmer who is interested in beef-raising, to select sires that will produce steers possessing the desired type and finishing qualities. We would also advise him to house in cheaper buildings thereby cutting down overhead expenses; to feed largely of those crops grown on the farm, for, in all our rotation work, the evidence to date is, that it is imperative, in growing cash crops, to grow other crops in our rotations to insure these cash crops. By utilizing the non-cash crops through our live stock (in this case beef-feeding) we are not depleting our soil fertility. The farmer must bear in mind that the cash value in profits (largely of steers finished during the winter months) is only part of his gain and that the plant food stored in well-kept barn-yard manure is also an invaluable asset to him.

